Energy efficient multi-family solutions
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Boyan Koussarov

**Age** • 36 years old

**Danfoss seniority** • 5 years in Danfoss

**Education** • Master’s degree in Mechanical engineering – technical university, Sofia
• Master’s degree in Sales, business communication and finance – VUZF university, Sofia

**Highlights** • 10+ years of experience in selling energy efficient products and solutions.
• International experience in HVAC&R business (Balkan Markets & Europe)
Danfoss Heating + Danfoss Cooling = Danfoss Climate Solutions
ACCELERATE THE GREEN TRANSITION

Energy efficient solutions for a sustainable future

World-class expertise anchored in local knowhow

Integrated solutions for optimized HVACR systems
Our key business areas
Temperature, pressure, and flow controls enable us to deliver unparalleled comfort and energy efficiency

Multi-Family Houses

Commercial Buildings

Industrial Process Industry

District Energy Sub stations
Heat Pumps
Roof Top Units
Chillers
Condensing Units

Single-Family Houses

Food Retail

Industrial Cold Rooms
Multifamily Houses Portfolio Overview

- **Residential Heating**
  - Classified as Business

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**Global position**

- #1
- 15%

**PL20 – Ventilation & ERC**

**PL21 – Electrical Floor Heating**

**PL34 – Hydronic Floor Heating**

**PL61 – Smart heating & Apps**

**PL67 – Flatstations**

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**PL03 – Radiator valves & Thermostats**
Core Verticals
Our focus is on key residential and light commercial verticals - but we are relevant across all verticals.

<table>
<thead>
<tr>
<th>Multi-family houses</th>
<th>Single-family houses</th>
<th>Light commercial</th>
<th>Commercial</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1" alt="Multi-family houses" /></td>
<td><img src="image2" alt="Single-family houses" /></td>
<td><img src="image3" alt="Light commercial" /></td>
<td><img src="image4" alt="Commercial" /></td>
<td><img src="image5" alt="Others" /></td>
</tr>
</tbody>
</table>

- **PL03**
- **PL20**
- **PL21**
- **PL34**
- **PL61**
- **PL67**

*Many different applications*
Core Applications
Our key focus is heating including a comprehensive range of solutions across relevant domains for the installer regardless of the energy type, heating source, etc.
Radiator thermostats support private homes with obtaining comfort. By maintaining constant and desired room temperatures, they reduce the energy consumption.

Radiator valve (RA/M30)  
Hydro cable valve  
Lockshield valve, RLV  
H-piece, RLV-KB/KS/K  
Build-in Valve  
FJRV valve

VHS valve and cover  
VHX valves  
Design sensors, RAX  
X-tra collection  
Chrome plated valve range

Dynamic valve  
Dynamic H-piece  
Dynamic VHS

Compression fittings  
Lance valve  
Press-fit valve  
DeltaP and Demounting tool
Addressing the need of efficient temperature control within single-family, multi-family and commercial buildings

- **HEAT RECOVERY VENTILATION**
  - Floor Unit
  - Wall Unit
  - Smart Heating and controls
  - Ducts & Pipes

- **ELECTRIC THERMOSTATS**
  - RET 1001
  - RET 2001

- **PROGRAMMABLE THERMOSTATS**
  - TP One
  - TP 5001

- **TIMERS & PROGRAMMERS**
  - TS710
  - FP720

- **MOTORIZED ZONE VALVES**
  - 2 & 3 Port divert
  - 3 port mid position
PL21 Portfolio: Electric Floor Heating

Addressing the need of efficient temperature control within single-family, multi-family, commercial buildings and outdoor applications.

**INDOOR HEATING**
- Heating mats
- Heating Cables
- Accessories & Tools
- Foils

**THERMOSTATS**
- DEVIreg Smart
- DEVIreg Touch
- DEVIreg Multi
- DEVIreg 850, 13x, 233, 330, 53x, 610

**OUTDOOR HEATING**
- Heating cables used in snowmelting
- Frost protection in pipes
- Agriculture & Stadiums
- Ground & asphalt heating
PL34 Portfolio: Hydronic Floor Heating

Addressing the need of efficient temperature control within single-family and multi-family homes.

**CONTROLS**
- ICON 24V/230V & Wireless
- 230V BasicPlus2
- 24V Wired FHWX

**ACTUATORS**
- 24V/230V (RA connection)
- 24V/230V (M30 x 1,5)
- OEM actuators

**MANIFOLDS**
- FHH manifold
- Stainless Steel Manifold
- Shutoff Manifold
- BasicPlus Manifold
- Retail Manifold
- Mixing Shunts

**PIPES & PANELS**
- PEXA Pipe
- PE-RT Pipe
- Composite pipe
- Speed Up panel
- Basic Panel

**MIXING SHUNTS**
- Mixing Shunts
- Midi Shunts
PL61 Portfolio: Electronic Radiator Thermostats

Addressing the need of efficient temperature control within single-family, multi-family and commercial buildings

- **eTRV, ECO**
  - Danfoss Eco, Bluetooth operated smart heating

- **eTRV ALLY**
  - Danfoss Ally, Smart heating operated by Zigbee 3.0
  - Works in combination with floor heating and soon integrated with other heating applications

- **eTRV, OEM**
  - eTRV's manufactured for other OEM customers herein utility companies and other heating application providers
Benefits of flat stations compared to centralized heating in flats

- Independent of the energy supply, i.e. applicable both with gas boiler, oil boiler or a district heating substation in the basement
- Maximum hot-water comfort
- No large hot-water tank.
- Enables individual accounting for each apartment, which ensures fair energy bill according to consumption
- Minimum space requirements for installation, which ensures optimized use of building area for other purposes
- Minimum loss of heat and low return temperatures e.g. lower operating costs

Top performers: EvoFlat FSS, EvoFlat Reno, AkvaLux 2 Reno, UnoFloor